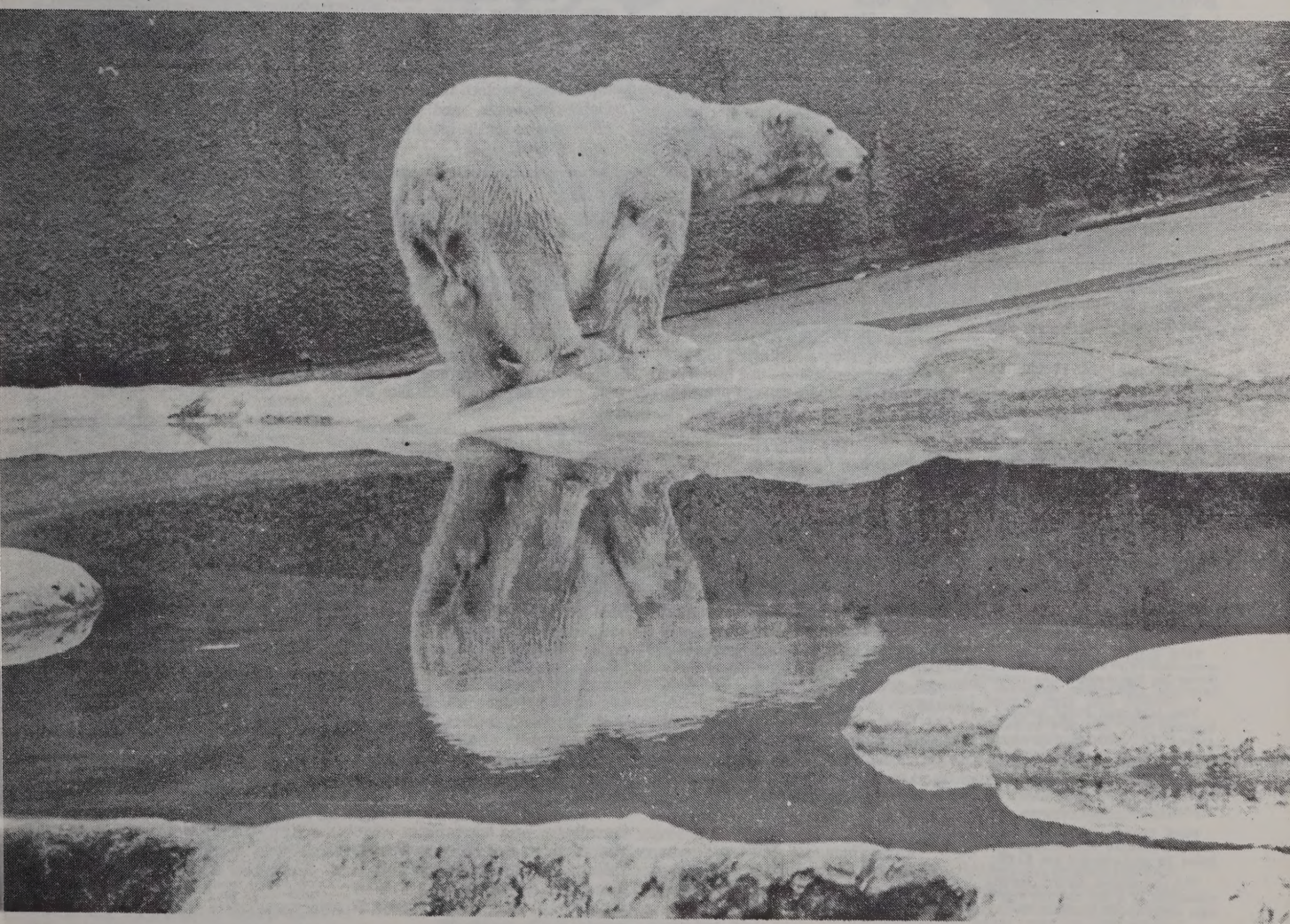
THE POLAR TIMES



Bowhead Migration Is Studied

Scientists will be out on the ice in the Beaufort Sea this spring at two separate camps to try to track the migration routes of the bowhead whales.

They will be using bio-accoustics: under-water recordings, 24 hours a day, to pick up the sounds of the huge mammals as they pass by.

One camp is on Pingok Island, on the Western edge of the proposed Beaufort Sea sale area. Another is on Narwhal Island, north of Prudhoe Bay.

About 10,000 pounds of scientific equipment already has been flown in to each camp, and each will have a three-man crew, starting when the whales turn east at Barrow. One member of each team will be a representative of the Alaska Eskimo Whaling Commission, there to advise and to use his expert knowledge of the ice to keep the team safe.

The camps will be maintained until breakup at the end of May, when most of the whales will have gone by.

In addition, three flights a week are scheduled over the lease sale area, using Twin Otter aircraft, to keep an eye on ice distribution and the position of the Bowheads.

The Eskimos say there are three lead systems that develop in the Arctic Ocean every year, parallel to the Beaufort Sea coast. The bowheads use any one of the three.

In the spring, the nearest lead to shore is still 40 to 60 miles offshore in the sale area. The whales' transit takes them very close to Barrow at the start of the spring migration, but the lead then heads off the coast. By the time it reaches Canada and is north of the MacKenzie River Delta, the whales must take a north-south lead to get back to the coast.

By contrast, when the whales begin their trip south in the fall, they hug the Arctic coast. That's why Eskimos in Nuiqsut and Kaktovik only hunt in the fall.

Eskimo hunters prefer to be as near to their villages as possible when they land a whale because the huge mammals must be butchered within 14 to 16 hours or they start to rot as a result of captured body heat.

Leads in the ice off the Barrow coast have been as close to shore as one mile. Other years, the nearest lead to shore may be 10 to 12 miles offshore.

Even in the dead of winter, scientists have found that lead systems open and close in the Arctic Ocean.

The whale studies are part of the environmental impact statement on the Beaufort sale, which is to be completed by August.

But Gary Hufford, former coordinator of the environmental studies for the sale, emphasizes that the statment is "just one step, not the end." The bowhead study will continue much past the sale.

"They are trying to have the fall and spring whale studies to the Secretary of Interior and the governor by the first of August, for a sale decision by November," Hufford said. The results of next fall's whale study also are expected to be in their hands before the decision is made.

The Anchorage Times
April 22, 1979

Bowhead whales today inhabit the eastern and western Arctic, usually staying near the edge of the ice. The animals no longer visit the Gulf of St. Lawrence during the winter, as they did in their heyday.

Adult bowheads reach about 58 feet in length, though some may reach as much as 65 feet. The huge head takes up about one third of the body. Whalebone plates, some 14 feet long, hang from the upper jaw and filter a tremendous quantity of marine crustaceans from the water — enough to maintain a layer of blubber 18 inches thick.

This blubber makes the whale so buoyant that some scientists believe that it has trouble diving.

The commercial advantages of the bowhead nearly caused its extinction — one large specimen yielded one and a half tons of lucrative whalebone, and 25 tons of oil. The whales also swim slowly, and do not sink when killed.

The United Kingdom alone was dispatching 200-300 whaling ships a year when the hunt for bowheads reached its height. Today, international agreements protect these sociable bowheads, and only killer whales and a few Inuit prey on them.

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AUGUST HOWARD, Editor

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Researchers Live Lonely Life On Drifting Ice In Arctic Sea

NORTH POLE (AP) — Thirty Canadians aboard a floating ice fortress here were caught in a timeless, silent world without sunsets or weekends.

Their only link to the rest of the world was daily radio contacts with the Canadian Forces Base at Alert, Northwest Territories, 434 miles away.

Since April, their research ice stations drifted slowly through a frozen, forbidding sea, with no other apparent signs of life.

This largest-ever Canadian expedition to the pole sought information on the origins of the Lomonosov Ridge, hoping this submerged mountain range in the Arctic Ocean may unlock a mystery millions of years old.

Newly-arrived staff and visitors from the south came through Alert by a Twin Otter plane, bringing news and views on the progress of the recent election, the Stanley Cup playoffs and Prime Minister Margaret Thatcher's victory in Britain.

Camp manager Fred Alt, who manned the communications equipment, announced day-old hockey scores at dinner time.

Except for a few unwelcome but fairly predictable crises, as when tiny cracks in the surface ice tore open, every day was much like the last.

Morning came unannounced. During the brief Arctic summer, an ever-vigilant sun hung in the sky, moving only in circles above the horizon.

For most, the day began with breakfast at 7 a.m. Many continued working late into the night partly because there was no darkness, partly because there was nothing else to do and partly because much had to be done during the 10-week expedition.

Any scientific information uncollected on this expedition would be lost forever, since researchers may never be able to retrace their efforts here again.

-Life in this remote polar camp went on mainly inside huge insulated tents and storage huts.

Nearly all buildings doubled as dormitories and laboratories where two to six men bedded down with their equipment. All slept on cots, inside thick, down-filled Arctic sleeping bags.

June 27

Bering Ice Is Breaking A Little Early

By The Associated Press

The Bering Sea ice is breaking up earlier than usual this year.

The National Environmental Satellite Service here said the ice retreat is about a month ahead of the 1978 record.

Bruce Webster, ice forecaster for the National Weather Service in Fairbanks, said satellite pictures taken late last month showed no ice in Bristol Bay. He said the pictures showed that the ice edge over the rest of the Bering Sea was about 200 miles north of its normal position.

The satellite service said warmer than normal weather this winter retarded ice growth and kept it north of its usual position.

The amount of ice also is far below seasonal norms, the satellite service said.

April 12

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The Polar Times

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No. 88 *JUNE 1979*

Mystery of Bering Sea Solved

By BAYARD WEBSTER

The New York Times / June 26, 1979

A joint scientific expedition by the United States and Soviet Union has solved the mystery of why the Bering Sea — the forbidding, cold and stormy body of salt water separating the two nations — produces fish in greater abundance than almost any other oceanic body.

A two-year analysis of data gathered during the expedition in 1977 has revealed that the rich quality of the Bering's sea life stems from a previously uncharted current that flows northward from the depths of the Pacific.

As the current moves through the Bering, it rises to the surface along the continental shelf in the northeastern half of the sea. This upwelling of water brings a full measure of the nitrates, phosphates, silicates and trace elements at the bottom of the food chain that are needed for the growth of phytoplankton, which provide nourishment for small marine animals, the research has shown.

The findings were reported at a recent meeting at Fordham University's Calder Conservation and Ecology Center in Armonk, N.Y., by six Soviet and American scientists who participated in the expedition. Dr. Alla Tsiban, a marine microbiologist, headed the Soviet delegation and Dr. John J. McLaughlin, director of Fordham's Calder Center, headed the American group.

Since the mid-17th century, when Peter the Great ordered Russian vessels into the Bering's uncharted waters, the Bering has been one of the world's major fishing grounds, yielding abundant catches to sailors able to survive its drenching rains, fog, floating ice and frequent 40-foot seas.

But it was only recently that biologists became curious about the source of the nutrients that enabled about 170 plant and 300 marine animal species to flourish, forming one of the largest and richest resources of the world marine ecosystem.

Two years ago, in an effort to answer some of the questions scientists had raised, the two powerful nations that face each other across the 53-mile wide Bering Strait, which separates Alaska and Siberia, agreed to undertake the joint scientific project.

Meeting in Moscow in April 1977, delegations from the two countries organized the project under the terms of a 1932 accord that called for scientific investigation of ways to exploit and preserve the Bering Sea.

U.S.-Soviet mission traced nutrient-laden ocean current entering Bering Sea. Dots indicate areas where water samples were taken.

The Soviets, at a cost of about a million dollars, furnished the 300-foot ship Volna and a 100-member crew, including 18 scientists. The Americans, at a cost of about $300,000, furnished the sea probe system, the computer technology and nine scientists.

Three months later, the expedition set off from Dutch Harbor in the eastern Aleutians. Taking samples from 28 locations in the sea, the scientists gathered data on water temperature and salinity, amounts and types of pollutants, and the quantities of dissolved oxygen, heavy metals, minerals, hydrocarbons, marine nutrients and plankton.

Data on underwater currents were also recorded and fed into a computer aboard the Volna. An analysis of the data in the computer, which was on loan from the International Business Machines Corporation, revealed the content and approximate path of the sea's previously uncharted current.

The researchers discovered that the continuous movement of the current provided a constant source of nutrients from outside areas, resulting in the production of seafood at a much higher rate than in oceanic areas that must depend on regenerating nutrients within their own boundaries.

Dr. Mark Brown, a Fordham oceanographic ecologist and a member of the United States scientific team, reported at the Armonk meeting that the researchers had found that the upper layer of the sea, the most productive part, contained large quantities of two of the principal nutrients of phytoplankton, nitrate and phosphate, which were distributed over the Bering's continental slope by the upwelling current.

High Levels of Zooplankton

The sophisticated sea probes showed that nitrate ranged from 0.5 to 1.5 milligrams per liter of water, and phosphate ranged from .095 to .190 milligrams per liter. And zooplankton, the tiny marine animals that are slightly

higher in the marine food chain, were found to average 10,000 individuals per cubic meter of water. Such levels are as high as or higher than those found in any other marine body in the world, Dr. Brown said.

Because of such high nutrient levels, the Soviet Union and the United States, which share the Bering waters by treaty, gather more than one million metric tons of pollack, sole, cod, halibut, perch and salmon each year, as well as vast quantities of King crab and shrimp.

Dr. Tsiban reported at the Armonk meeting that both nations were eager to establish baseline water-quality data for the Bering so that they could be alerted in future monitoring expeditions to changes in water composition that might signal pollution dangers.

She pointed out that the large land areas surrounding the sea contained extensive undeveloped reserves of oil and minerals. When mining, drilling technology and factories are introduced into the area, as expected in both countries, chemicals and heavy metals can be expected to seep into the rivers that pour into the Bering, endangering the present purity of the sea, she said.

"This is the only common sea shared by our two nations, and its future depends on the countries that surround it," she said, adding that she had been "tremendously pleased" by the cooperation between the American and Soviet scientists during the project.

Dr. McLaughlin told of similar fears, pointing out that the Aleutian Island chain made the Bering a much more enclosed sea than it appeared to be on maps and that its low temperature would cause problems if pollutants ran into the sea. Because the water temperature is often near freezing, the sea's natural chemical oxidation process is reduced. As a result, he said, microbial degradation of pollutants occurs at a much slower rate than in most other seas.

"If some American industrialist were to put up something like a chromium plant on the Yukon, the Bering might be in deep trouble," Dr. McLaughlin said. "That's why we and the Russians want to set up a yearly monitoring program that can alert us to future problems."

Pribilof seal harvest gets going despite observers

By RALPH ANDERSEN
Daily News-Miner, Fairbanks

June 28

Despite threats last week from Greenpeace of Alaska and several other conservationist organizations to protest the annual fur seal harvest in the Pribilofs, Natives of the islands in the Bering Sea are proceeding with the harvest.

Members of Greenpeace cancelled their protest trip to St. Paul Island because of reported in-house financial problems involving the group's San Francisco and Vancouver offices. But representatives of Fund for Animals and Friends of Animals were there to observe the harvest.

Agafon Krukoff, president of the Aleut regional corporation, said Wednesday that the harvest began Tuesday at 5 a.m. and 1,800 seals had been taken.

He said the harvest will last until the end of July, and as many as 28,000 seal pelts are expected to be harvested this year.

Krukoff said the harvest takes place only on St. Paul because a moratorium was put into effect several years ago allowing residents of St. George to harvest 350 seals for food.

The Fur Seal Act of 1966 says the federal government must be the one to take seals, so it is the employer during the harvest, he said.

"Right now the way the act is written, the residents can't control the harvest," he said. Proposed amendments to the act would give the harvest and seal population responsibility to the island Natives.

He said the harvest program, which is the main economic resource on the island, employs about 150 of the island's 522 persons during harvest time and about 35 residents year-round. Those employed for the harvest make between $5,000 and $6,000 and fulltime workers make about $20,000 a year.

Krukoff said that at first Greenpeace didn't argue against the St. Paul seal harvest, but rather against a similar harvest in Canada, and he was surprised with the argument.

They "had a good argument in the Canadian seal issue but don't have an argument against us." because on the island seals are not in short supply as they are in Canada, he said. The islanders don't disturb the breeding habits of the seals because they don't take pups; only male seals are harvested.

"They were looking for reasons to stop the harvest by screaming there were high levels of mercury" in the seals that could be dangerous, and that prospective Japanese meat buyers decided against buying Pribilof seal meat because of that. He said the Japanese actually backed out for other reasons.

But a study found questionable levels of mercury in the Pribilof seals in 1970. The federal government told residents of the findings and that the high levels were concentrated, for the most part, in seal livers. A year later, officials found the mercury level decreased in residents, Krukoff said.

He said islanders are not worried now about seals being contaminated with mercury. His organization has asked Greenpeace for a retraction of its statement in a press release that said the seals were contaminated.

2 Territories Wait to Be Provinces

The New York Times

WHITEHORSE, Yukon Territory, May 17 — Separating Canada from the Soviet Union, its other superpower neighbor, are two vast territories that are waiting to become Canadian provinces.

Together, Yukon and the Northwest Territories represent 40 percent of Canada's area but only two-tenths of 1 percent of its population. Forbidding and usually frozen, these lands and their native peoples remain largely on the fringes of the Canadian consciousness. Although both have taken tentative steps toward increased self-government, the territories are still ruled by a commissioner appointed by the Prime Minister. Provincial status is probably still some time away, but would come sooner under a government led by the Progressive Conservative Party.

Apart from a few cottage industries like stone carving, the major industries are mining and petroleum exploration, and, to a lesser extent, tourism.

For Canada's northern residents, winter is only now waning. Asked recently what the people of the Yukon do in the summer, one resident replied: "Well, if it comes on a Sunday, we have a picnic."

Puzzling Arctic Haze Is Identified As a Byproduct of Air Pollution

By The Associated Press

A puzzling haze over the Arctic ice packs has been identified as a byproduct of air pollution, a finding that may support predictions of a disastrous melting of the earth's ice caps.

But Dr. Kenneth Rahn, one of the scientists whose work helped identify the seasonal haze, said Tuesday that it was impossible without further work to predict what climatic effect the Arctic pollution might have.

Moreover, Dr. Rahn, of the University of Rhode Island School of Oceanography, said no similar haze had been found over the Antarctic, which has most of the world's ice.

Sunlight warms the haze, and, Dr. Rahn said, this could reinforce the "greenhouse effect" predicted by some scientists, in which a rise in atmospheric carbon dioxide due to combustion could melt the ice caps and flood coastal cities.

Ship Will Cover 6,000 Miles In Search for Oil Off Alaska

By GLADWIN HILL
The New York Times

ABOARD S.S. SURVEYOR, off Alaska, June 20 — The 292-foot steamship Surveyor, sailing cautiously but purposefully alongside the pine-forested islands and coastal reaches of the inland waterway between the state of Washington and Ketchikan, Alaska, flies the flags of the United States and the National Oceanic and Atmospheric Administration.

But an additional flag might well bear the image of an automobile, for if cars of the next decade are going to have gasoline, a lot of the supply may depend on missions like this, the Surveyor's 24th.

The Department of the Interior has just tentatively scheduled a half-dozen sales over the next five years of oil production rights on far-flung unexplored segments of the outer continental shelf bordering Alaska. The Prudhoe Bay oilfield on Alaska's northern coast has proved an important ace-in-the-hole in the current energy bind. Hopes are great that one or more of the scheduled offshore "frontier" developments may produce a comparable bonanza.

From Earthquakes to Birds

But even before the sales can start, much less the drilling, an immense amount of scientific and technical data must be marshaled to pinpoint the possibilities of, and constraints upon, oil operations in these strange and difficult areas of the Arctic and sub-Arctic.

"The information that's needed ranges all the way from earthquake faults to the mating habits of birds, with a lot of other things in between," said Dr. Rudi Engelmann, director of the oceanic agency's Outer Continental Shelf Environmental Assessment Program.

The agency, a branch of the Department of Commerce, acts as the exploratory arm of the Bureau of Land Management's leasing program, operated by the Interior Department. Various Alaskan areas have been under the agency's study for the last five years.

The Surveyor's latest voyage is concerned with the Gulf of Alaska, off the southern coast, and nearby Kodiak Island. Both areas involve the offshore tracts due to be put up for auction next year.

The expedition, from the Surveyor's base at Seattle, will take four months and cover more than 6,000 miles.

The Surveyor, a 3,150-ton ship built in 1961 for the United States Weather Service and now valued at $20 million, is among the largest of a score of vessels in the "NOAA Navy," whose operations are divided evenly between the Atlantic and the Pacific.

The ship has a staff of 12 commissioned officers, a civilian crew of 67 and a revolving covey of scientists. She is loaded with computers and complex electronic gear that can pinpoint her position on the globe within a few hundred yards and discern configurations not much bigger than a breadbox on the ocean floor several miles below.

The Surveyor's decks are stacked with sophisticated sounding, sensing and sampling devices that would boggle the mind of Mark Twain, whose lead-and-string fathometer was about the fanciest underwater tool known to exist a century ago.

There are automated digging and boring implements for bottom sampling; small free-floating buoys for tracing currents; cartridges that record temperature, pressure and salinity; seismographs that sit on the ocean floor, tape-record earth tremors, and then, on an electronic signal, cut loose and float to the surface to yield their measurements.

A steel cable no thicker than a clothesline that simply goes down several miles without breaking or kinking is classified as an old-fashioned piece of equipment: new ones are valued for how many electric circuits they can carry.

The newly announced leasing program involves undersea tracts in the Beaufort Sea and the Chukchi Sea off Alaska's northern coast; areas designated as the Norton Basin, the Navarin Basin, the St. George Basin and the North Aleutian Shelf off the state's western coast; Cook Inlet near Anchorage, where oil and gas have already been discovered, and tracts designated simply as "Gulf of Alaska" and "Kodiak."

41 Key Items on List

The Environmental Assessment Program has a list of 41 "key concerns and issues" on which its reconnaissance is focused.

The list includes the behavior of Arctic ice and ocean currents, which could be critical in the operation of drilling platforms and management of oil spills; bird, animal and fish breeding and migration patterns, which could be disrupted, and the possible effects of once-in-a-century storms, which have never been observed.

The Surveyor has a cruising speed of 11 to 12 knots and a range of 12,700 miles. Fresh-food requirements limit its missions to 24 days.

This voyage will be broken, with periodic runs into Juneau and to Kodiak island for supplies, into four "legs." The three main subjects of inquiry will be marine mammals — seals, sea lions, otters and whales; placement and recovery of seismographic devices to map earthquake faults and intensities; and observations of ocean currents in Bristol Bay, the big coastal indention just north of the Aleutian Island chain's base.

"Oil extraction off Alaska presents a lot of unusual specialized problems, and they vary a lot from one area to another," Dr. Engelmann said. "Ice can pile up so that it gouges great furrows in the ocean bottom, and anything you've got down there, like pipes or platform footings, can be in trouble.

"In some places, there's a phenomenon called 'gas cratering,' the occurrences of big holes in the ocean floor apparently due to gas from decaying peat. This is a threat to rigs and pipelines."

Another prospective hazard is the volcano Mount Augustine, in the lower Cook Inlet. An eruption in 1883 produced waves 30 feet high, and the volcano has a record of erupting every 30 years.

At that rate it is "very likely to affect oil and gas structures" in the area, Dr. Engelmann said and cited such possible concomitants as "ash falls, acid rains, noxious fumes, bombs and a glowing avalanche that would travel along the sea floor."

The New York Times / June 26, 1979

Danish Queen Visiting Greenland As Nation Celebrates Home-Rule

NUUK, Greenland, May 1 (UPI) — Thousands of Greenlanders joined Queen Margrethe of Denmark today in celebrations marking the first meeting of the island nation's Parliament.

Greenland voted in January for extended home-rule and approved a three-year process that gradually loosens its ties to Denmark, which has ruled the island since 1721.

Queen Margrethe attended the first session of the 21-member Parliament, called the Landstinget, and handed over the official home-rule document to the legislature sitting in the recently renamed capital city of Nuuk, formerly Godthaab.

A Reporter's Notebook: Island on Its Own

By ROBERT D. HERSHEY Jr.
The New York Times

SONDRE STROM FJORD, Greenland, Jan. 19 — In the old days it was called Blue-West 8, a mountain-ringed United States air base through which 20,000 fighters and bombers were ferried to Europe during World War II. The warplanes are gone from Greenland now and satellites have taken over much of the sentry duty, but the American military presence lingers on.

The base, which boasts a bowling alley, a gym, a radio station and the only heated swimming pool on the world's largest island, provides logistical support for the four DEW-line (distant early warning) radar stations scattered across the heart of Greenland. It also helps service the ballistic-missile early-warning system installation at Thule, in the northwest, which is mainly supplied from McGuire Air Force Base, in New Jersey.

Ninety-five Americans, including nine women, work here on one-year tours, and a staff will probably be here for a long time. The mission, to help send a stream of data to the North American Air Defense Command in Colorado Springs, has not changed since the installations were built in the 1950's, said Col. James R. Galloway, who runs the base. "There's no indication for the future that it's not going to be here," he added.

Colonel Galloway, whose only extra pay is an allowance of a little over a dollar a day, says his biggest problem is his short tour of duty — though he is not complaining very loudly. "For a lot of the projects I start I don't see the finish," he explained.

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The Greenlanders — perhaps history's best example of a colonial people who have exploited their masters, the Danes — do not much mind having the Americans around. The United States maintains the base, which also serves as the island's main airport and its only direct link to Europe; there is no commercial service to the rest of North America.

A debate on home rule, which was endorsed by a wide margin at a referendum Wednesday, rarely made the Americans an issue.

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Geographically speaking, this may be the most misrepresented land on earth. Generations of children have stared at the vast blob that is Greenland on the ordinary school map and gone away with the notion that it is about three times the area of the United States. Actually it is only a third as big — 1,660 miles long and 685 miles at the widest point.

The distortion results from portraying a world that is round on a flat map — in that case, what is known as the Mercator projection. As Knud Ellitsgaard-Rasmussen of the Danish Geological Survey put it: "As you get near the poles the distortion is almost 100 percent. You should use spherical or conical projections" — or a globe.

The New York Times/Jan. 17, 1979

Incidentally, without the cover of ice from one to three miles thick — if it melted the oceans would rise 25 feet — Greenland would be no bigger than Norway, or 132,000 square miles.

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A brief visit is inadequate to put into perspective either the problems or the accomplishments of the indigenous people and the Danes with whom they have been integrated politically for 25 years and through family ties for hundreds.

In Godthaab, which looks like a Rocky Mountain winter resort without the skiers, planners say their biggest worry is housing. The mostly small, brightly colored private homes are expensive to build, and the multistory apartment buildings put up in the last 15 years are in short supply and showing signs of abuse and decay. The capital's population has increased more than sixfold to 9,200 since 1950.

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This vast, inhospitable island of spectacular Arctic beauty has developed rapidly since it was integrated with Denmark in 1953. The scandalously bad housing and rampant tuberculosis that a Danish commission found here in the mid-1940's have been largely overcome and today Godthaab, the capital, is filled with well-insulated apartment buildings, Mercedes taxicabs, well-stocked stores and, to the dismay of some older people, brighly clad youngsters driving around on snowmobiles.

The boom of the 1960's, engineered by fortune-hunting Danes, was chaotic, however, and in 1972 the native Greenlanders, mostly a racial mixture of Eskimos and Danes, began to press for self-determination.

The home-rule plan, which is to be phased in over five years beginning May 1, puts Greenland on essentially the same footing as the Faroe Islands. But unlike the Faroes, a Danish outpost northwest of Scotland, Greenland is not strong enough to be financially independent and Copenhagen will continue to subsidize it heavily.

The drain in recent years has been about $250 million, about $5,000 for each Greenlander. The new Greenland assembly, however, will be responsible for spending about 40 percent of the islands's money, about double what is locally controlled now.

Denmark's heavy burden here is an accident of history. Norway was an early colonizer of Greenland, but delegates to the Congress of Vienna in 1815 forgot to mention outlying Norwegian possessions when detaching Norway from Denmark and the Danes kept it.

The question of oil was one of the most difficult issues in negotiating home rule and it remains largely unresolved.

Joint decision-making power has been left in the hands of the Danish and Greenland authorities, giving both a veto over any development policy they do not like. Denmark has insisted that any revenue from oil found in Greenland be used first to offset its subsidy to the island. Amounts larger than this would be subject to negotiation.

The icecap that covers all but a few miles along the coast makes even radio communication difficult and the mail can take three months to move across country. Except in summer, when there are a few passenger boats, the only way to reach Godthaab, on the southwest coast, from the island's main airfield is by a helicopter ride that takes an hour and three-quarters and costs about $200.

There are only three flights a week to the island and the only access is through Copenhagen. None of the more than 100 towns and settlements is connected to any other by road.

Whale-Oil Regulations Are Repealed by Carey

The New York Times

ALBANY, June 15 — In the 19th century, when the whale-oil industry was big business, the New York State Legislature undertook to regulate it.

It did this by establishing standards for the sale of whale oil, the various forms of which were widely used as illuminants and lubricants. Among the regulations was a requirement that the Secretary of State furnish each county clerk with a device called an oleometer to test the oils sold.

Yesterday, Governor Carey signed a bill repealing the old law. Although the whale-oil business was once "a major industry," Mr. Carey said, "this has not been the case for many years" and so the Secretary of State should be excused from having to provide oleometers.

A few years ago, the County Attorney of Rensselaer County asked then-Secretary of State Mario M. Cuomo to provide his county with an oleometer. Mr. Cuomo replied that, despite a thorough search of his office, he had been unable to find one.

Climatologists Are Warned North Pole Might Melt

By WALTER SULLIVAN
The New York Times

GENEVA, Feb. 13 — There is a real possibility that some people now in their infancy will live to a time when the ice at the North Pole will have melted, a change that would cause swift and perhaps catastrophic changes in climate.

Although many uncertainties affect the possibility, the change could come about because of rapid increases in fuel-burning and a consequent rise in atmospheric carbon dioxide.

Carbon dioxide allows sunlight to enter the atmosphere and heat the earth, but it inhibits the escape of heat radiation into space.

This so-called "greenhouse effect" was discussed today by several specialists reporting to the World Climate Conference here, and the conferees were urged to assign top priority to assessing the carbon dioxide threat in the 20-year world climate program now in preparation.

In a study being presented to the conference by the International Institute for Applied Systems Analysis in Austria, it is projected that global energy use may increase from three to five times by the middle of the next century.

The increase would derive chiefly from industrialization of the developing countries. If, as many experts expect, most of the energy comes from burning coal, oil and gas, the amount of carbon dioxide in the atmosphere may almost double by early in the next century and redouble by mid-century.

This projection was by Dr. W. Lawrence Gates, climatologist at Oregon State University in Corvallis. The resulting global warming "may amount to an environmental catastrophe," he said.

In another report, Dr. R. Edward Munn of the University of Toronto and Dr. Lester Machta of the National Oceanic and Atmospheric Administration in Washington also discussed the threat.

Another Projection

They concluded, however, that "few, if any, scientists believe the carbon dioxide problem in itself justifies a curb, today, in the usage of fossil fuels or deforestation." Since forests absorb that gas, incorporating its carbon into wood and leaves, the clearing of land for agriculture is adding to atmospheric carbon dioxide levels.

Nevertheless, they said, within 5 or 10 years "governments could come to a crossroad" in determining their energy and land-use policies. The uncertainties include the extent to which oceans and vegetation will absorb the added carbon dioxide.

As the oceans become warmer, they may release some of the carbon dioxide already stored there. If, on the other hand, the ice adrift on the Arctic Ocean melts, the resulting water would then take up some of it.

Dr. Herman Flohn, Emeritus Professor of Meteorology at the University of Bonn in West Germany, said that "the most fascinating, and also the most controversial problem" facing climatologists was the possibility that the Arctic ice (apart from Greenland) would vanish. The Arctic Ocean has not been free of ice in almost 2.5 million years.

Earlier Soviet Idea

The ice's removal by design was discussed in 1962 by a Soviet scientist, M. I. Bodyko, who later suggested that heating by atmospheric carbon dioxide could do the job. From sampling of sea floor sediments, Dr. Flohn pointed out, it has recently been possible to reconstruct the history of glaciation at both poles, showing that for 10 million years world climate was grossly lopsided.

The reason was that, beginning more than 12 million years ago the Antarctic continent became ice covered, reaching, from five million to six million years ago, an accumulation 50 percent more voluminous than today. Yet until less than 2.5 million years ago the North Pole region was open ocean.

The effect was to shift climate zones of the Northern Hemisphere some 400 miles north. If the Arctic ice melts, Dr. Flohn predicted, winter rains will become meager in the Mediterranean, Near East and American Southwest, and summer droughts would become frequent between north latitudes 45 and 50 degrees.

Dr. B. John Mason, head of the British weather services, told of computer simulation of the effects of an ice-free Arctic Ocean. A "rather unexpected result," he said, was the indication that mid-latitudes in the United States, Eastern Siberia and Western Europe would be cooled by as much as 16 degrees Fahrenheit.

The energy study by the International Institute for Applied Systems Analysis examined three potential sources for the greatly increased demand projected for the year 2030: solar energy, fossil fuels or nuclear energy. In part because of the time required to develop the technology, it was concluded that solar energy could contribute no more than a quarter of the needs.

The choice, therefore, is primarily between nuclear and fossil fuel, the former raising formidable problem of radioactive waste disposal and the latter a threat to world climate.

The world is faced with a "Faustian bargain," Dr. Roger Revelle, chairman of tomorrow morning's session, told a press conference today, adding, "Whatever you do is bad." Dr. Revelle, who formerly headed the population center at Harvard University, noted that population growth had already tapered off in Europe, including European Russia and Japan.

There is "real hope," he said, that in the next century world population may level off at eight billion — roughly double the present level. But to raise the living standards of such a population to advanced levels will place formidable demands on energy production.

Soviet Papers Report Ski Unit Has Reached North Pole Over Floes

The Soviet Union has disclosed that a team of seven skiers has reached the North Pole after covering 900 miles in 77 days across the ice of the Arctic Ocean.

According to Moscow newspapers received in New York, the group was the first to reach the top of the world from Soviet territory across the polar pack ice and the first to make the journey on their feet without using sleds, dogs or other aids.

The seven men carried three tents, two inflatable rubber dinghies and other supplies in knapsacks. They were in continuous radio communication with the mainland, and food was airdropped to them from time to time along the route as they coped with below-zero temperatures, snowstorms, the rough surface of moving ice floes, and areas of open water.

The skiers left Henrietta Island, off the Siberian mainland, on March 16 and reached their destination on May 31. They were met by Soviet officials and reporters who had flown to the North Pole in small planes capable of landing on the ice. After 30 hours at the pole, during which the achievement was celebrated with fireworks, the group was returned by plane to the north Siberian air base of Chersky for a news conference, before flying back to Moscow. June 11

21 Whalers Back Home After Storm

JUNEAU (AP)—Twenty-one members of a whaling party were safely back home Sunday after being stranded in the icy waters of the Bering Strait, according to a Coast Guard spokesman.

The party's small aluminum boats had drifted as much as 15 miles apart in winds up to 49 knots, said spokesman Dave Cipra.

Thirteen persons in four boats were plucked from ice floes 25-30 miles from their home of Savoonga on St. Lawrence Island in the Bering Strait. They were saved Saturday afternoon by personnel from the Coast Guard icebreaker Polar Sea, the Coast Guard said.

The hunters radioed the village that they were stranded in the blizzard-tossed sea without food and warm clothing. The Polar Sea responded to their calls with two helicopters, which picked up the whalers and dropped emergency locators so the boats could be rounded up by the ship, Cipra said.

Eight other Savoonga whalers in two boats made their way to the island where they spent the night, the Coast Guard said. April 30

Concern continues over polar bears

WASHINGTON (AP)—Biologists are unsure if legal protections given polar bears, nomadic wanderers of the Arctic icecap, have resulted in population increases, says a U.S. government biologist.

Once thought to be declining in numbers, polar bears were given legal protection by the United States, Norway and the U.S.S.R.

But international researchers cannot agree on whether polar bear populations have increased or are declining, says Doug DeMaster, a U.S. Fish and Wildlife biologist.

However, DeMaster claims biologists agree that more bears can be killed by hunters without endangering the species. Subsistence hunters such as Eskimos value the bear for its pelt and meat. Sport hunters consider the bear a trophy.

The United States stopped sport hunting of polar bears in 1972. Norway imposed a five-year moratorium on the hunting of polar bears in 1973. The Russians stopped most polar bear hunting in 1956, permitting the capture of only 10 to 15 cubs per year for zoos.

The U.S. Fish and Wildlife Service estimates there are 5,700 polar bears in Alaska. It recently proposed that 170 bears a year be permitted to be killed by sport and subsistence hunters, saying the population is sufficient to sustain the loss.

Canada plans to increase its harvest of polar bears from 648 in 1978 to 719 this year.

U.S. authorities believe hunting does not pose the biggest threat to the species. In a recent report, it said:

"Human development, especially that asssociated with oil and gas extraction, poses the greatest immediate threat to polar bears."

Arctic oil exploration could force bears to abandon traditional den areas and oil spills could kill aquatic life on which the bears are dependent for food, it said.

The Russians estimate the worldwide polar bear population at 10,000. Norwegian biologists believe 20,000 bears survive. The U.S. Fish and Wildlife Service says the U.S.S.R. and Norwegian estimates "are based on broad assumptions and should be considered very general." The U.S. agency says "the 20,000 figure may be low."

The difficulty of determining precise population figures stems from the bears' habits. Except for females with their young, the bears are solitary and driven by wanderlust, roaming steadily across the vast expanses of Arctic ice.

Only during the breeding season in the spring months do the shaggy white bears come together. Males seek females by following their tracks across the sea ice. But these brief coplings do not provide researchers with sufficient data to make precise population estimates, a factor which caused some to assert in the early 1970s that bear numbers were declining.

Daily News-Miner, Fairbanks, Alaska Feb. 14

Line oil flow to be increased

LOS ANGELES (AP)—Atlantic Richfield Co. says the flow of oil through the trans-Alaska pipeline will be increased to 1.52 million barrels a day by the end of 1980.

ARCO President Thornton Bradshaw told company stockholders the plan had the approval of the eight companies that have shares in the line from Alaska's North Slope to the marine terminal at Valdez.

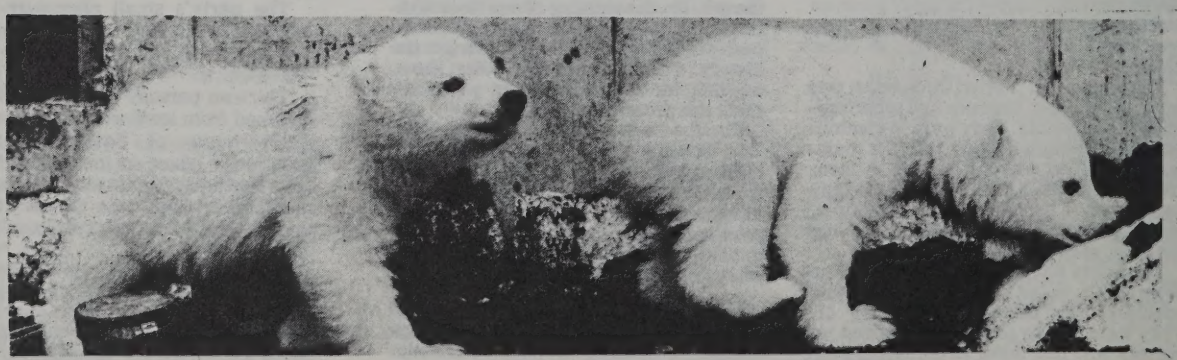
The line is now carrying Prudhoe Bay crude south at the rate of 1.23 million barrels a day. Bradshaw said that would be increased to 1.36 million barrels a day by the end of this year and to 1.52 million barrels daily by the end of the following year.

The owner companies had originally planned to boost the daily flow from 1.23 million barrels to 2 million barrels in one step, but an ARCO officer said the plan was found to be impractical.

The boost in daily flow this year would be accomplished by adding two new pumps at pump stations 2 and 8.

The plan to increase the flow even further next year would rest on the ability to use auxiliary pumps, heat the oil to speed flow, use better valves and other unproven techniques, an ARCO officer said.

The port of Murmansk in Soviet Lapland is so far north that its polar nights last about 60 days each winter.



ORPHANED CUBS—Two polar bear cubs, orphaned early this month near Point Lay, Alaska, were turned over to the Alaska Zoo in Anchorage until the U.S. Fish and Wildlife Service decides what to do with them. The mother of the cubs was shot by an unknown person.

April 18 *(Fish and Wildlife photo)*

European Smog Linked to Mysterious Arctic Haze

By WALTER SULLIVAN
The New York Times

GENEVA, Feb. 17 — Smog and dust from industrial Europe and China may account for a mysterious haze that hangs over Alaska, Greenland and the Arctic Ocean every spring, according to analysis of atmospheric particles that are assumed to cause the haze.

This phenomenon is being cited by participants in the World Climate Conference here as one of the most dramatic examples to date of how activity in one nation can affect weather far beyond its borders.

The conference has brought together from 40 nations specialists in climate and those fields closely affected by the weather, such as agriculture, fisheries, forestry, water supply and economic geography. The meeting, which enters its second and final week Monday, is designed to draft recommendations for a World Climate Program.

Such an international effort would explore natural trends and the role of human activity, notably industrial pollution, in altering climate.

The Arctic haze, which some meteorologists here say becomes as intense as a Los Angeles smog in late winter and spring, began to puzzle weather specialists shortly after World War II. It was observed by a young man named J. Murray Mitchell Jr. during weather reconnaissance flights, code-named Ptarmigan, conducted over the Arctic Ocean from Eielson Field near Fairbanks, Alaska.

Suspected Origin of Particles

That young man, now Dr. Mitchell, a delegate to the talks here, has become a leading climate specialist in the National Oceanic and Atmospheric Administration. The recent particle sampling and analysis cited by Dr. Mitchell, Dr. Lester Machta of the same agency and others at the meetings here has been done by Dr. Kenneth Rahn at the University of Rhode Island and Dr. Glenn Shaw at the Geophysical Institute of the University of Alaska.

They have reportedly found that from 80 to 85 percent of particles collected from the air at Point Barrow, Alaska, are sulfates presumably derived from the burning of high-sulfur fuels. Also included are traces of vanadium suspected to be of industrial origin and silicate particles that may have been swept up from the Gobi Deserts of China and Mongolia.

Sulfur compounds from the smokestacks of Germany's Ruhr Basin and other industrial regions of Western Europe and Britain are known to blow north, polluting the rains that fall on Scandinavia and making some lakes there so acidic that they are almost devoid of life. Chinese participants in the meetings here say some of their lakes are similarly "dead," notably near Harbin in the industrial part of Manchuria.

Meteorologists at the Air Force Base in Thule, Greenland, have reported a haze there that may be of similar origin. Likewise, early explorers of the ice-covered Arctic Ocean, such as Fridtjof Nansen, are said to have encountered a haze in the absence of extensive open water that puzzled them.

That pollution from the United States might also play a role is suggested by the report of Canadian participants in the meeting that haziness in the easternmost provinces of Canada increases sixfold in summer when the flow of air is from New Jersey and New England.

Dr. Mitchell is not convinced that the phenomenon has been adequately explained. He says he has seen a less intense version of it at the South Pole Station, high on the Polar Plateau of Antarctica. If the 9,000 feet of ice beneath that station were occupied by polluted air instead of ice, Dr. Mitchell points out, the haze there might be as intense as in the north, where the observations are made close to sea level.

Oil Spills Under Ice Explained

New studies show that in case of an oil spill under Prudhoe Bay ice, the oil will attach itself to the ice and it would take an unusually severe current to move it.

That word came Wednesday from Gary Hufford, who is in charge of environmental studies for the proposed joint federal-state Beaufort Sea oil and gas lease sale in December.

Hufford said at a meeting at the Alaska Center for the Environment that scientists have been surprised at how oil reacts with shorefast ice.

"We expected there would be a smooth under-surface to the ice," he said, but that's not the case. "The under-surface is rough." Divers have confirmed it, he said.

Once the shorefast ice starts breaking up, then the ice becomes a problem. But Hufford said an oil spill under the ice during the long Arctic winter would allow a long time for cleanup.

Studies have shown that a spill would concentrate under a section of ice, forming a layer and attaching itself to the ice. The ice then could be cut away and the oil burned.

If the oil wasn't cleaned up before the ice breaks out, then it could be a problem for fish and mammals, he said.

The studies have been conducted by the Cold Regions Research Laboratory, using an impulse radar system.

Hufford said the U.S. this week has been invited to join the Canadian government in oil spill containment and cleanup studies, which have been under way for several years.

It is easier to get permits for controlled test spills in Canadian waters, he said. Another advantage to the U.S. would be to be able to take advantage of the data base which the Canadians have developed and not have to repeat their work. March 25

The Anchorage Times

Tracking Icebergs

The United States Coast Guard is testing a new method of keeping track of icebergs, which still sometimes collide with ships in the North Atlantic.

The experimental technique, being tested by the Coast Guard Research and Development Center at Groton, Conn., involves tagging icebergs with radio-transmitters that can be tracked by weather satellite.

The method is to fly low over an iceberg and spear it with a dart attached by a 330-yard lanyard to a radio-equipped buoy that drops into the water nearby. In the extreme north, where icebergs have flatter tops, the instrument packages can be dropped by parachute directly onto the ice.

The experiments, which have been suspended since last summer but are to resume shortly, were deemed necessary because previously used methods of tracking have proved inadequate.

During the spring, when icebergs drift south, the International Ice Patrol publishes bulletins twice daily on iceberg positions in the Grand Banks area. Nevertheless, some are missed or lost, particularly in foul weather, and airborne patrols have difficulty identifying icebergs that have rolled over.

According to R. Quincy Robe of the Coast Guard Research and Development Center, the main challenge is to tag smaller, rounded icebergs that tend to roll over or shed ice in deluges of several hundred tons.

Early efforts at tracking included using a bow and arrow to fire a test tube full of dye at an iceberg or "bombing" it with a dye package. In both cases, the color was quickly washed away by weather or hidden when the iceberg rolled over.

Coast Guard officials hope that the new technique will solve that problem because the buoys will be far enough from the iceberg to remain clear if the berg rolls over.

Fresh Clues to a Green Antarctica Found

By WALTER SULLIVAN
The New York Times

Underneath Antarctica's Ross Ice Shelf, a region the size of Spain, the water is perpetually dark, cut off from the world by floating ice almost 1,400 feet thick.

In sediment from the ocean floor there, extracted through a hole in the ice shelf, scientists have found relicts of a time when the continent's shores were green with vegetation.

The vegetation, its presence deduced from pollen grains in the sediment, was like that flourishing in Australia, New Zealand and South America at the time of the Middle Miocene period, 14 million to 20 million years ago. Antarctica was then just breaking its link with South America and had not yet drifted to its present position almost centered on the South Pole.

As the continent drifted closer to the pole, the vegetation became progressively more meager.

Ice May Be 1.5 Million Years Old

These findings from recent Antarctic research are described in a series of reports in the Feb. 2 issue of the journal Science. The reports also say that new evidence has been found in a meteorite to suggest that the great ice sheet covering the Antarctic continent existed at least 1.54 million years ago.

This would seem to provide the final refutation of the proposition that the continent was more recently free of ice and was charted by ancient navigators.

The Antarctic ice sheet has proved to be an extraordinarily effective collector of meteorites. Over hundreds of thousands of years, they have fallen onto its surface, buried by snow and carried, inch by inch, toward the sea, where the ice breaks off into icebergs or flows out to form such great aprons as the Ross Ice Shelf.

On some parts of the coast, however, this flow is blocked by mountains. The stalled ice is worn away by winds flowing off the interior ice plateau, like water over a spillway, and the accumulation of meteorites is exposed. Near the Yamato Mountains, the Japanese have found about 1,000 specimens, and near the Allan Hills, west of McMurdo Sound on the opposite side of Antarctica, at least 300 more have been discovered by American expeditions.

Deciphering Meteorites' Histories

Some of these meteorites were discovered by Dr. E.L. Fireman and his colleagues at the Smithsonian Astrophysical Observatory in Cambridge, Mass. They have specialized in deciphering meteorite histories in terms of the radioactivity that the meteorites acquired while still exposed to the cosmic ray radiation of the space environment. Once the meteorites fall to earth, that exposure ends and the time of their fall can be estimated from the extent to which the induced radioactivity has decayed.

One Yamato Mountain specimen seems to have fallen onto the ice seven million years ago, according to readings from a form, or isotope, of manganese that is radioactive. However, two other components of the meteorite, isotopes of beryllium and aluminum, indicate a period of only one million years. The evidence for a period of at least 1.54 million years comes from an Allan Hills meteorite and, according to the Smithsonian experts' analysis, it is far more convincing.

Delving into the hidden world beneath the Ross Ice Shelf became possible after a jet flame cut a hole through it in December 1977. Beneath the ice, 1,386 feet thick, lies 782 feet of water. Measurements of radioactive debris from nuclear weapons tests, tritium and carbon 14, have shown that water from the Pacific replaces the water beneath the ice in less than six years.

A Poverty of Living Things

This presumably brings in nutrients and organisms from the sunny world 250 miles to the north. Nevertheless, the sea-floor area under the drill hole is far poorer in life than ocean areas that are darker, more frigid and far more deeply submerged. Sediment scooped from the top five inches of sea floor beneath the Antarctic drill hole showed no living animals. Close to 300 crustaceans and other small creatures, primarily amphipods, were collected from the water, and one or two fish were photographed.

Eleven cores as long as three feet were extracted from the sea floor, which was found to form a trough presumably gouged out when a stream of ice flowing off the continent scoured the bottom. No remains of recent microscopic organisms were found in the sediment. The organisms there were chiefly diatoms from the mid-Miocene period that could have lived only where sunlight was available. One is known by the provocative name Nitzschia Maleinterpretaria Schrader.

It was in this sediment that pollen was found testifying to former vegetation. Because the shelf ice and the hole through it flow northeast at three feet a day, each core was extracted from a different spot along a 40-foot path.

Could Have Dispersed Organisms

As noted in the newly published reports, until the Antarctic Peninsula broke away from Cape Horn, the oceanic current that encircles Antarctica probably flowed through a great trough that bisected Antarctica and now lies buried beneath the ice of Marie Byrd Land. Such a current would have contributed to the dispersal of new oceanic organisms. Since it would have passed directly over the sampling site, it may have helped determine the nature of the fossil record there.

Data from the drill hole and from sea water samplings at 18 open-sea sites along the ice cliffs where the Ross Shelf meets the ocean have led to the conclusion that the bottom of the shelf is constantly melting away. It retains its relatively uniform thickness, however, not only because fresh glacial ice flows onto it off the continent, but because added snow and rime fall directly to the shelf itself.

The factors controlling the thickness of the Ross Ice Shelf are of more than academic interest because some believe the shelf sometimes disintegrates, allowing a surge of inland ice to flow rapidly into the sea, raising worldwide sea levels. Unfortunately, the sediment record that might have confirmed or refuted this hypothesis appears to have been swept away from beneath the drill hole area.

300-Pound Meteorite Found in Big Cluster On the Antarctic Ice

WASHINGTON, Feb. 17 (AP) — Scientists have discovered a group of 309 meteorites on the ice of Antarctica, including a 300-pound fragment that is one of the largest yet found on the continent.

The National Science Foundation, which manages United States scientific research in Antarctica, announced the find by American and Japanese scientists.

Dr. William A. Cassidy of the University of Pittsburgh, head of the American team, said today that the collection obtained on a three-month expedition ending in January included two extremely rare carbon-bearing meteorites called carbonaceous chondrites.

These are particularly valuable because they appear to have undergone little change since they were formed at what scientists believe was the birth of the solar system 4.5 billion years ago.

Meteorites consist of stony or metallic material from space that survives the searing trip through earth's atmosphere to strike the surface. Scientists study them for clues to the origin of earth and the solar system.

Dr. Cassidy said the 300-pound specimen was of a metallic type and that the other samples ranged down to the size of a pea.

The latest collection of meteorites was found on the ice in two locations. One was near the Allan Hills in Victoria Land, about 130 miles northwest of the main American station at McMurdo, and the other near Darwin Glacier, about 175 miles southwest of McMurdo.

Dr. Cassidy credited a New Zealand scientific team with helping to find the large meteorite. The New Zealanders radioed the Americans that they had found six iron meteorites near Darwin Glacier. When a United States-Japanese group arrived, they found nine more, including the giant fragment.

The latest meteorite find will be distributed to research centers in the United States and Japan. The annual expeditions are conducted in conjunction with the Japanese National Institute of Polar Research in Tokyo.

Antarctic Conservation Act of 1978

On 28 October 1978 the President signed into law the Antarctic Conservation Act of 1978 as passed by Congress. The act provides "for the conservation and protection of the fauna and flora of Antarctica, and of the ecosystem upon which such fauna and flora depend." The bill implements for U.S. citizens the Agreed Measures for Conservation of Antarctic Fauna and Flora recommended in 1964 under the Antarctic Treaty.

The Act makes it unlawful for any U.S. citizen, unless authorized by regulation or permit:

"(a) to take within Antarctica any native mammal or native bird,
(b) to collect within any specially protected area any native plant,
(c) to introduce into Antarctica any animal or plant that is not indigenous to Antarctica,
(d) to enter any specially protected area or site of special scientific interest, or
(e) to discharge, or otherwise dispose of, any pollutant within Antarctica."

Possession, transfer, import, or export of native mammals, plants, or birds is unlawful unless authorized by regulation or permit. The National Science Foundation is responsible for implementing the act and establishing a system of permits that will allow "the study of antarctic fauna and flora, their adaptation to their rigorous environment, and their interrelationships within that environment."

Permits authorizing the taking within Antarctica of any native mammal or bird, not of a specially protected species, may be issued only to provide specimens "for scientific study or scientific information" or "for museums, zoological gardens, or other educational or cultural institutions or uses." The permit system will ensure that "no more native mammals and native birds are taken in any year than can normally be replaced by net natural reproduction in the following breeding season." The goal of the system is to maintain "the variety of species and the balance of the natural ecological systems within Antarctica."

The act enables the identification of sites of special scientific interest in accord with Antarctic Treaty recommendations. These sites should be of unique value for scientific investigation and for that reason will need protection from interference. Specially protected areas may also be designated, based on their outstanding scientific or ecological interest. Any native mammal or bird which is approved by the United States for special protection under the Agreed Measures of the Antarctic Treaty may be identified as a specially protected species.

Permits for the taking of any specially protected species may be issued only if there is a compelling scientific purpose and only if the taking of specimens will not jeopardize the survival of the species or the existing natural ecosystem. Entry into specially protected areas will be permitted only if there is a compelling scientific purpose which cannot be satisfied elsewhere and only if the actions allowed under the permit will not jeopardize the existing natural ecosystem in the area. The operation of any surface vehicle within a specially protected area is prohibited.

ANTARCTIC JOURNAL December 1978

U.S. Navy photo by Richard L. Horton

All antarctic fauna and flora, including Weddell seals like the one shown above, are covered by the Antarctic Conservation Act of 1978.

Haschemeyer Braves Antarctic For Scientific Research

Dr. Audrey Haschemeyer, a marine biochemist in Hunter's Biological Sciences Department, spent two months in Antarctica last fall studying how Antarctic fish adapt to the extreme cold. And in her limited spare time, she organized the biggest sporting event in Antarctic history, the Scott's Hut race.

Dr. Haschemeyer's research is funded by the National Science Foundation and will require her to make two more trips to the Antarctic. A division of the navy is contracted to provide support for the scientists through a helicopter "airline" described as "the world's southernmost airline," by supplying power through The Penguin Power and Lighting Co., and by providing the food. Dr. Haschemeyer says the cooking was just like home, but that may have been the only thing that was familiar in Antarctica. "It's hard to believe you're on the same planet," she said. "The greatest impact was the scenery. There are miles and miles of desolation, of ice-covered mountains, valleys, and ice caves."

She chose Antarctica for her research because it has a full range of living organisms in its waters which remain at 28 degrees Fahrenheit (the freezing point for fresh water) all year round. She and her team of five scientists, including Rita Mathews, a research associate in Dr. Haschemeyer's lab at Hunter, and Alan Hudson, a graduate of Hunter, found that Antarctic fish develop an anti-freeze protein known as "freezing resistance" along with a "cold adaptation" that enables them not only to survive the freezing temperature but to function in it.

As for the race, it was a gruesome five mile run twice around Antarctica's McMurdo station and twice over a preciptious peninsular road bordering the coast. Eighty-nine runners participated, including Americans, New Zealanders, and one Alaskan huskie canine, making it not only a national but international competition. Two hundred people came out to watch the daring challengers struggle through the heavy snow and winds. Jim Holmen from Grand Marias, Minnesota, won the race with a time of 36:25 minutes. Dr. Haschemeyer won the women's division with an approximate time of 48 minutes doggedly beating out the huskie by seconds. Says *The Runner* magazine, "The five-mile all-comers meet was the biggest single spectator/participant sporting event in Antarctic history." It also praised Dr. Haschemeyer as "the day's real winner" because of her role as founder and organizer of the race.

At present, Dr. Haschemeyer is back at Hunter College where she became a faculty member in 1969. She earned a PhD from the University of California at Berkeley in physical chemistry and holds membership in several scientific societies, including the Association for Women in Science, Sigma Xi.

U.S. mercy flight to Soviet plane crash

Jan. 6

Commander Morgan, a veteran pilot of the Vietnam War, had just completed a 24-hour flying mission when he got the mercy call to fly from McMurdo Station across Antarctica to a crashed IL14 aircraft at the Russian base of Molodezhnaya.

He spent the next 29 hours in a United States Hercules flying across Antarctica twice and then on to Dunedin to bring five injured Russians to hospital.

Three had already died in the crash.

"Four of the Russians looked as if they would make it okay, but one man was pretty badly cut up. His face and head was a bit of a mess," Commander Morgan said in Christchurch last evening.

"I kept wondering if he was going to be okay. That was the worst part of the flight, hoping that he wouldn't die on us."

Commander Morgan said he believed 14 Russians had been aboard the aircraft when it crashed. "From what I can gather they lost the left engine and came down pretty hard."

He had seen the crashed Russian aircraft. Although the under-carriage had been "wiped out" the plane had not caught fire.

"When we arrived, the Russian camp commander came out and thanked us personally for coming. They were really glad to see us," Captain Morgan said.

Although the Hercules was flown by three separate crews on its 11,400km mercy dash, Commander Morgan, who is 42, chose to remain in charge of the plane. "I just wanted to see this thing out," he said.

The flight was the first mercy dash Commander Morgan had made at Antarctica; this is his third season as a pilot with the United States Navy Antarctic support force.

A Russian doctor went with the five injured. As well as the nine crew, the Hercules carried a United States doctor and two medics.

When the Hercules arrived back at McMurdo with the injured Russians, the co-pilots, Lieutenant-Commander Frank Piazza and Lieutenant Junior Grade David Boice, came aboard for the last leg of the trip to Dunedin.

"It only took something like 35 minutes to refuel the plane at McMurdo and then we hot-footed it," Lieutenant Commander Piazza said.

The injured Russians were kept on board as the plane was refuelled and a new crew prepared for the flight to Dunedin.

A Russian scientist also made the journey to act as interpreter.

"They were talking among themselves a lot, but didn't say much to us," said Lieutenant-Commander Piazza.

Commander Morgan, a native of Norfolk, Virginia, has been in the United States Navy for 25 years. He became a pilot in 1959.

The mercy flight was also the first that Lieutenant-Commander Piazza, aged 32, had made.

"We had hoped for tail winds, but we didn't get many. About half-way across to New Zealand we hit a head wind which put our arrival time back about half an hour," he said.

The Hercules did not encounter any snowstorms on the flight. The trip from McMurdo Sound to Dunedin took about 7½ hours.

"When we got to Dunedin we cut the engines quickly so that the noise and fumes wouldn't bother the injured," said Lieutenant-Commander Piazza.

Although Commander Morgan had been on duty for 53 hours he did not bother with sleep when he arrived at the United States Navy Headquarters at Christchurch Airport. Instead, he had a quick change of clothes and went for a quiet beer at the officers' club.

The Press Association reports that a United States military spokesman said last evening that the crash was believed to have been caused by the failure of the port engine of the Ilyushin-14 on take-off from the Molodezhnaya base.

The base is 2900km from the American base at McMurdo Sound.

The crash killed the pilot, the co-pilot and a passenger. Their names were not available late last evening.

At Dunedin, the seriously injured man, Garib Uvikaev, was carried off the aircraft on a stretcher to an ambulance. He was in a coma and had been put on an intravenous drip and oxygen.

His condition in hospital late last evening was reported as serious.

The other Russian to be carried from the plane to the waiting ambulances was Alexander Kostikov.

One of the injured men who walked from the aircraft with the assistance of an American medic was Alexander Tkachev. The names of the other two injured Russians were not immediately available. They are not thought to be seriously hurt.

The First Secretary at the Russian Embassy in Wellington, Mr Anatoly Botov, flew to Dunedin yesterday afternoon to meet the American aircraft on its arrival.

He said that the response of the Americans to the Russians' call for help was "just the tradition of comradeship between the expeditions of America, Britain, New Zealand, and Australia."

Mr Botov said that the Russians did not have any aircraft with the range needed to fly the men to a hospital from the Molodezhnaya base.

The Hercules returned briefly to Dunedin Airport yesterday afternoon, 20 minutes after take-off, to deliver a jacket and spectacles.

The items, the spectacles owned by the Russian doctor travelling with the patients and the jacket to one of the injured men, had been left on board.

NEWS FROM ANTARCTICA

Australia's Antarctic station, Mawson, celebrated its 25th year of research operations on February 13.

The station, which lies 3220 miles south west of Perth, Western Australia, was established in 1954 and is the longest continuously operating station manned inside the Antarctic Circle.

Australia maintains two other stations in the Australian Antarctic Territory at Davis and Casey. Emphasis of activity has been towards basic understanding of the Antarctic environment and the study of physical phenomena in the region. Transporting personnel and equipment to and from the three stations has been the biggest problem facing Antarctic research programs. In the past access has been by ship only.

However in January the Minister for Science and the Environment, Senator James Webster, said air transport might be about to usher in a new era in Australia's Antarctic operations.

He was speaking on his arrival at Casey station after a 1351-mile proving flight from the United States station at McMurdo.

Senator Webster flew to McMurdo from Christchurch, New Zealand, on a regular U.S. Hercules flight then on to Casey on the proving flight by a U.S. ski-equipped Hercules aircraft.

The proving flight demonstrated that air transport was an entirely feasible means of access to Australia's Antarctic outposts, Senator Webster said. There was an urgent need for Australia to improve its transport links if it were to substantiate its claims to Antarctica, increase its scientific activities there and participate effectively in resource development.

Earlier this Antarctic summer a seven-man Australian team returned to the Casey base after four months field work reaching 620 miles into the interior of Antarctica with temperatures down to minus 58 degrees Fahrenheit. It was the longest traverse carried out by Australians in this region since 1962 when a party travelled to the Soviet station Vostov and back.

Boy Scout Spends 'Summer' In Antarctic

Mark Leinmiller skipped a large part of this fall and winter in Georgia. He spent them below the equator, where it's summer.

But don't envision the 19-year-old Sprayberry graduate basking in the sun. He spent those months in Antarctica, where it was much colder than Georgia ever gets.

Mark, assistant scoutmaster for Boy Scout Troop 750 which meets at Covenant Presbyterian Church on Canton Highway, went to Antarctica to commemorate the 50th anniversary of Adm. Richard Byrd's 1928 expedition to the South Pole. Adm. Byrd was accompanied by Scout Paul Siple.

Mark, who first heard of the trip in an article in a scouting magazine, was one of thousands of Boy Scout competitors interested in representing Siple.

Scouting officials picked Mark because of his leadership, outdoor and cold weather camping experience. Mark's good academic record helped too.

The 1977 graduate said he also sent in lots of letters of recommendation. The officials looked at extra-curricular activities also, "and I was involved in just about everything."

Mark submitted an essay on why he wanted to go to Antarctica, and why he thought he should be the Boy Scout selected. In the process of being selected, he was interviewed by several Atlanta-area professors.

Mark's expenses were paid by a Readers Digest fund and the National Science Foundation.

While in Antarctica, Mark served as a research assistant to serveral scientific groups, including some from Norway, England, Japan, New Zealand, Israel and Germany.

While his technical title was research assistant, Mark said he did a little bit of everything during his three-months' stay.

He drove tractors, forklifts, sorted mail, worked as a carpenter and learned "an incredible amount."

"From the time I got there until the time I left the sun never set. It was a little tough to get used to, living in a tent," Mark said.

It was unusually cold, even for Antarctica, the first day Mark was setting up camp. That day it was 23 degrees below zero with 35 miles per hour wind, he said.

Mark did not live in a tent the whole time he was gone. He spent seven weeks at Darwin camp, where there are huts, a week on the Coast Guard icebreaker "Polar Star," a week at the South Pole and a few days at Siple Station, named for his Boy Scout predecessor.

Siple ended up returning to Antarctica six times, Mark said, and with the title of logistics coordinator for Adm Byrd.

Mark spent the rest of the three months at McMurdo station, the "metropolis" of Antarctica.

Mark was one of about 800 scientists spending the summer in Antarctica. In the winter, when it is dark day in and day out and travel is virtually impossible, only 75 to 100 scientists stay.

A lot of the summer travel is done on Lockheed C-130's, made in Marietta. They are equipped with skis for landing on ice and snow.

Mark, who went to the Antarctic via Los Angeles, Hawaii and New Zealand, said he would like to return some day.

"I'd like to got back. There's a lot I didn't get to see," he said.

Mark is the son of William and Louise Leinmiller. They own and operate Leinmiller and Associates, a firm of manufacturers' representatives.

Georgia Tech sophomore Mark Leinmiller poses with his Tech banner at the South Pole Annex. He was there as a representative of the Boy Scouts of America in recognition of the 50th anniversary of Admiral Byrd's expedition.

Australians Prohibit All Whaling Within Their Territorial Waters

The New York Times

MELBOURNE, Australia, April 7 — The Australian Government has announced a ban on whaling within Australia's 200-mile territorial limits. Importing of whale products into Australia will also be prohibited beginning in 1981, a Government statement said.

The Australian decision, announced Wedensday after a one-year inquiry, had been expected, and the Cheynes Beach Whaling Company last year closed down its operations at Albany, on the southern tip of Western Australia. In the 12 months ended last June Australia exported $2.6 million worth of whale products.

The Government inquiry warned that a number of whale species had been excessively depleted. It described the method of killing whales as horrible, and it said there was no doubt the whale, as well as the dolphin and the porpoise, had special significance for man.

Prime Minister Fraser, said: "This change in attitude has been influenced by community concern not only in Australia but throughout the world for the need to preserve these unique creatures." Satisfactory substitutes were readily available for nearly all whale products, he said.

The Government's decision will not affect Japanese and Soviet whalers in the South Pacific. Their fleets, which account for most of the present whale kills, took only 10 whales in Australian territorial waters last year.

Krill: the last fishing ground

By Robert C. Cowen
The Christian Science Monitor

Having hunted Antarctic whales nearly to extinction, some fish-minded nations are eyeing the whales' food – the famed Antarctic krill. These protein-rich, shrimp-like crustaceans swarm in such numbers they seem to offer a potential annual harvest on the order of 100 million metric tons, which is more than the combined fisheries of the world now provide.

However, as fisheries expert J. A. Gulland of the United Nations Food and Agricultural Organization has pointed out: "Though the Antarctic seems a relatively simple ecological system, it is still poorly understood, and we are a long way from being able to determine precisely how much krill can be harvested each year." Indeed, ignorantly exploited, the krill could be decimated. This would be disastrous for the penguins, seals, birds, and fish that feed on it, to say nothing of dashing any hope of recovery for the whales.

Thus it is encouraging that the Antarctic Treaty nations are working out an agreement to try to understand and manage sensibly this potentially massive food resource.

The original 12 nations that have explored the frozen continent for two decades were joined last year by Poland, which makes no secret of its interest in harvesting krill. In April, these 13 nations agreed in principle to a krill convention. They will meet again in July to work out details. The convention may well be completed and signed by the year's end.

While this would not bind the rest of the world, the agreement would involve all nations now operating in the Antarctic. And it would establish an important precedent. As now conceived, it would provide both for extensive research into the ecology of the krill and establish an inspectorate to monitor fishing quotas. The quotas would be based on knowledge, yet to be gained, of just how much fishing pressure the krill can stand on a sustained yield basis.

It is not at all obvious what such a sustainable yield would be. Although the annual amount eaten by whales is believed to have dropped from 180 million tons to 33 million tons, there is no sign that krill stocks have increased. Other animals that feed on krill may be making up the difference.

It is to avoid an ecological tragedy that Sayed Z. El-sayed of Texas Agricultural and Mechanical College convened an experts' meeting to propose the Biological Investigation of Marine Antarctic Systems and Stocks (BIOMASS) research program. This was adopted as an official objective by the UN Intergovernmental Oceanographic Commission last fall. The first BIOMASS study may get under way in 1980 or 1981.

Meanwhile, several nations – notably Britain, Germany, Japan, Poland, and the Soviet Union – are investigating the krill resource on their own. Their findings could contribute badly needed knowledge. But given present ignorance of where and how krill fit into Antarctic life cycles, any sizable commercial fishing would be dangerously premature.

Experts Tell How Antarctic's Ice Could Cause Widespread Floods

The New York Times

HOUSTON — If the West Antarctic ice sheet slips into the sea, as some glaciologists believe is possible, boats could be launched from the bottom steps of the Capitol in Washington and a third of Florida would be under water, a climate specialist said today.

He was Dr. Stephen H. Schneider, acting leader of the Climate Sensitivity Group at the National Center for Atmospheric Research in Boulder, Colo. Dr. Schneider spoke on climate change as a potential hazard at a session of the American Association for the Advancement of Science, which is conducting its annual meeting here.

Other participants in the discussion of such an Antarctic "surge" suggested, however, that while the slippage could occur within a century, it probably would take longer and there was no evidence that the slippage was imminent.

The Antarctic ice sheet is as much as three miles thick, and for more than two decades the possibility that some of it might slip off the continent has been debated. Attention has recently focused on the smaller division of the continent — West Antarctica — so defined because it lies south of the Americas and in Western longitudes.

Mushy Ice Beneath Sheet

Aerial probing by radar and drilling through the sheet has shown that parts of the ice are underlain by mushy ice and large pools of water.

As noted by Dr. John Mercer of the Institute of Polar Studies at Ohio State University, recent radiocarbon-dating of the retreat of the last ice sheet from central Canada has shown that it subsided surprisingly fast — in about two centuries. This has made more plausible the view that the Antarctic ice might do likewise where, as in the Hudson Bay area, much of its base lies below sea level.

The period before the last ice age was particularly warm and Dr. Mercer estimated that worldwide sea levels rose about 15 feet, presumably because the West Antarctic ice had melted. Slippage of the Antarctic ice might come, Dr. Mercer said, as a byproduct of human activity. Intensive fuel-burning is adding so much carbon dioxide to the atmosphere that its effect, like that of the glass in a greenhouse, may lead to a global warming that could send the least stable part of the ice into the sea.

Dr. James D. Hays, of the Lamont-Dougherty Geological Observatory at Columbia University, cited the suspected relationship of ice-age onsets to cyclic changes in the orbit and spin axis of the earth, which imply a new cooling within the next thousand years.

The effects are so subtle that an "amplifier" is needed to convert that slight change in sunlight to a global cooling. He believes the amplifier may be the extent of ice cover in the oceans surrounding Antarctica.

At present there is no sign of a build-up in that ice, although it appears that for many centuries the sub-Antarctic seas have gradually been cooling. He pointed out that from hundreds of cores extracted from the sea floors of that region it is evident that past changes between glacial and interglacial climate periods were abrupt — within 300 years or much less.

Dr. Hays urged that a close watch be kept by earth satellites on the extent of summer ice. Most of the sea ice around Antarctica melts in summer but if it became extensive this would reflect much solar energy back into space, cooling the climate.

Jan. 8

Fallout in the Snow

Scientists from the University of California have analyzed layers of Antarctic snow for plutonium fallout and concluded that although there was a heavy global fallout of the dangerous substance in 1955, the atmosphere is now almost entirely free of it.

Reporting their results this month in the British journal Nature, three marine scientists said they had analyzed successive layers of snow in a 15-foot pit dug in the Antarctic plateau some 10,000 feet above sea level. Because the snow in this region never thaws, layers of fallout are preserved intact and the depth of the sample taken can be matched with the year the snow fell.

The authors of the report said the sudden 1955 peak in plutonium fallout found in Antarctic snow probably corresponded to the "Castle" hydrogen bomb test by the United States at Bikini on Feb. 28, 1954.

U.S. Copter Falls in Antarctica

SCOTT BASE, Antarctica, Jan. 8 (Reuters) — A United States Navy helicopter has crashed in northeast Antarctica, injuring four men, the American Forces Radio said today. A Navy Hercules plane rescued the six passengers and crew members yesterday and flew them to a hospital at the American base at McMurdo Sound near here.

Cook claims South Georgia

South Georgia, Great Britain's oldest Antarctic possession, is located 800 miles southeast of the Falkland Islands. The area is 1,387 square miles, reports StanGib Ltd., 601 Franklin Ave., Garden City, N.Y. 11530.

The first recorded sighting of South Georgia was by Amerigo Vespucci during the 16th century. It was next seen by Anthony de la Roche in 1675. Capt. James Cook claimed South Georgia for Great Britain in 1775.

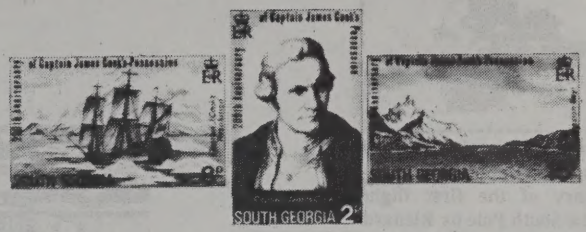
In 1880, an International Polar Commission was set up to initiate the first International Polar Year of 1882-83, in which 12 nations set up 14 stations in the polar regions to make coordinated observations of the earth magnetism and climate. One station was located on South Georgia.

By 1910, there were six land-whaling stations on South Georgia. The huge southern elephant seal breeds on the coast today.

South Georgia, a dependency of the Falkland Islands, has a population of administrators and scientists located at the base at King Edward Point.

Only one land bird is recorded in the Antarctic — the South Georgia pipit. Reindeer, introduced by man, breed on South Georgia.

Whaling in Antarctic waters is of recent origin. It dates from 1904 when the first shore station was established at South Georgia.



South Georgia commemorated the bicentenary of possession by Capt. James Cook with this stamp trio issued in 1976.

The Weddell seal, found on the Antarctic continent, has a colony on South Georgia. Sealing in the Antarctica proper dates from Capt. James Cook's discovery of South Georgia.

Johann Reinhold Forster, the naturalist who accompanied Cook, described the great number of elephant seals and fur seals to be found on South Georgia and even prophesized their possible exploitation.

South Georgia is an Antarctic island and has no month with a temperature above 5° centigrade. The island is glacier covered with very few species of flowering plants to be found. There are some 70 insect species.

The island lies in the middle of some of the best fishing ground off Antarctic proper. The fishing stocks are open to any country.

British Antarctic Territory

The British Antarctic Territory, which includes the whole of the Antarctic Peninsula, is a colony under the British crown.

The BAT lies within the Antarctic Treaty Area (south of latitude 60° south). It consists of all lands and islands south of latitude 60° south between longitudes 20° and 80° west and also the South Orkney Islands, South Shetland Islands, South Sandwich Islands and South Georgia Islands.

The area is about 2,095,000 square miles of which land covers about 660,000 square miles, according to StanGib Ltd., 601 Franklin Ave., Garden City, N.Y. 11530.

The area is utilized as a huge Antarctic observation station with the main stations located at Faraday, Halley, Rothera and Signa.

The sea communications to the BAT are maintained by the royal research ships, *John Biscoe* and *Bransfield*, and by the ice patrol vessel, HMS *Endurance*.

The Antarctic is the last place on earth where many countries are striving to cooperate and eliminate, in that area, all military and naval power.

Penguins are featured on four stamps issued by the British Antarctic Territory Nov. 17, 1978.

The BAT is considered to be located upon the greatest economic potential in the world. The problem is how to reach these riches in the extreme cold of the area.

An example of the cold is a reading at the Russian Scientific Observatory in 1960 of minus 126.9° F.

Experimentation is now going on in the Scotia Sea between South Georgia and South Orkney. The sea yields massive quantities of krill (Norwegian word for the young fry of fish but actually plantonic crustaceans and larvae).

The krill has been converted into a flour which may be used to augment the human diet. The British Antarctic Survey is now placing a strong emphasis on biological research, chemical analysis, water temperatures and methods of catching plankton (microscopic plant and animal life that passively floats with the motion of the oceans). Plankton is near the bottom rung of oceanic ecology.

Greenland has issued a new 2.50-kr brown stamp to honor the 250th anniversary of the founding of the town of Godhab. The town was settled by Hans Egede and a band of his companions in 1728. In Greenlandic the name is Nuuk: Godhab is the Danish version. The main design shows Egede and friends being hailed as heroes.

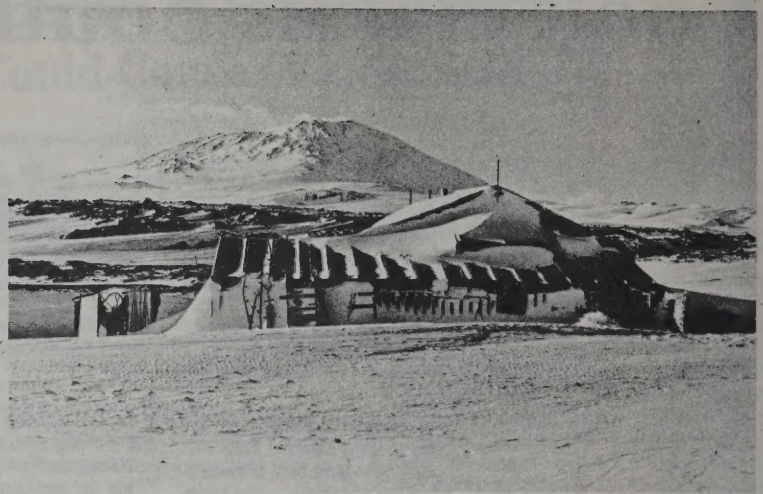
★★★

Greenland has announced its 1979 stamp program.

The first stamp on the agenda will be a three-stamp set with a portrait of Queen Margrethe. The denominations will be 80 ore, 130 ore and 160 ore.

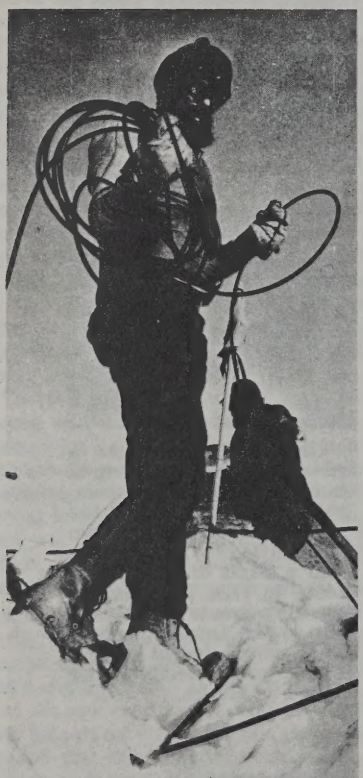
In June a semi-postal is scheduled to honor the centenary of the birth of Knud Rasmussen, noted educator and traveler. The surcharge will go to the Knud Rasmussen Folk High School. A September stamp will feature a figure in soapstone and an October issue will be an adhesive in tribute to the International Year of the Child.

Australian Antarctic Territory will pay tribute to the 50th anniversary of the first flight over the South Pole by Richard Byrd with this 55-cent stamp and a 20¢ value scheduled for June 20 release.



U.S. Navy photo by Howard Weinger

Scott's hut at Cape Evans, Ross Island, was built for the British Antarctic Expedition, 1910-13, when Scott and his party were unable to reach Hut Point because of ice conditions. The hut at Cape Evans stands today as an historic monument to the exploration of Antarctica.



U.S. Navy photo by Douglas K. Nortell

Early in the field season the main task is digging out camps that have been buried by a winter's accumulation of snow. Here a member of the Naval Support Force, Antarctica, lays out cable for the main side band communications antenna at Byrd Station. Byrd is used as a refueling stop for airplanes going to Siple Station.

Royal Australian Air Force photo

On 1 December 1978, a Royal Australian Air Force C-130 completed the first Australian Hercules landing in Antarctica. The airplane took off from Christchurch, New Zealand and landed on the sea ice runway at McMurdo Station, covering almost 4000 kilometers in 6 hours and 15 minutes. The Hercules carried 10 passengers and 11,000 kilograms of cargo in support of research teams working in Antarctica. It was the first of four Australian flights scheduled this season.